

NORTHWOODS JOURNAL – APRIL 2023

A Free Publication about Enjoying and Protecting Marinette County's Outdoor Life

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Registration Opens Soon for the June WI Land + Water Youth Conservation Camps!

<https://wisconsinlandwater.org/our-work/youth-education/conservation-camp>



Our conservation camps provide positive educational outdoor experiences, foster an appreciation for nature, and introduce a variety of careers in natural resources and conservation. Professionals from various agencies present programs on topics like wildlife, habitat, water quality, fisheries, forestry, orienteering, and canoeing. These professionals, as well as adult volunteers, serve as overnight staff and group leaders for the duration of camp.

Campers make new friends, participate in hands-on activities, practice social & leadership skills, enjoy the outdoors, and just have fun!



FOR BOTH CAMPS - registration information coming soon! Check the website above for upcoming information.

High School Camp

For students entering grades 9-12 in the upcoming school year who are interested in natural resources or simply love being outdoors. Camp dates are June 19-22, 2023 at North Lakeland Discovery Center near Manitowish Waters (Vilas County).

Middle School Camp

For students entering grades 6-8 in the upcoming year who have an interest in the outdoors. Camp dates are June 14-17, 2023 at Upham Woods in Wisconsin Dells.

Brad Matson Memorial Conservation Camp Scholarship

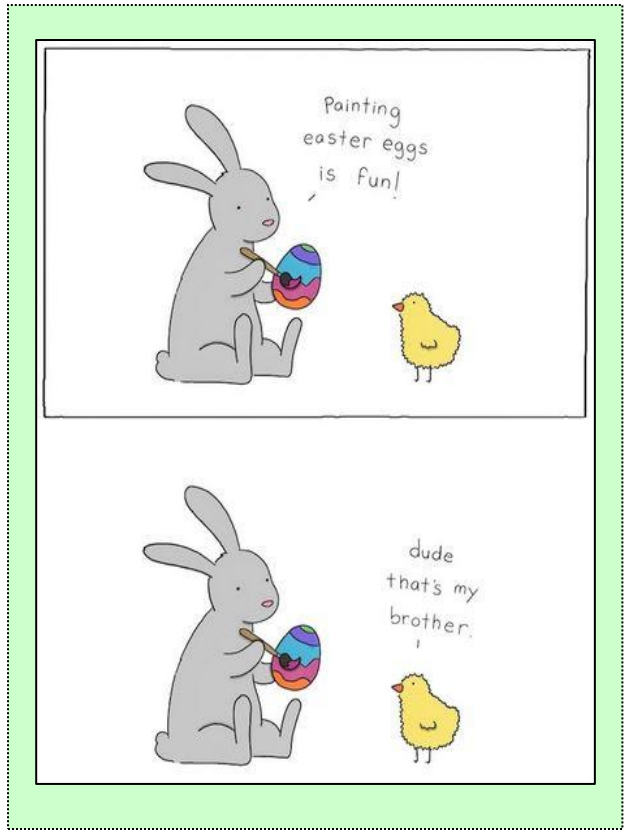
In honor of Iron County Supervisor and WI Land+Water Board of Directors member Brad Matson, the Youth Education Committee established a camp scholarship in his name. Brad was a passionate supporter of conservation programming for youth and his scholarship will give students who otherwise may not have the chance to experience the outdoors the opportunity to through our conservation summer camps.



Visit the WI Land + Water Youth Education Facebook page for more information & pictures from past camps!
<https://www.facebook.com/WILandWaterYouthEd/>

Northwoods Journal Online

Do you want to read current issues of the *Northwoods Journal* online or catch up on past issues? Visit www.marinettecounty.com and search for "Northwoods Journal." We can also send you an e-mail reminder when a new issue is posted online. No internet? We can mail you a copy. Email Anne Bartels, Information & Education Specialist, at anne.bartels@marinettecountywi.gov or call 715-732-7784.



Spring Activities for Kids!

<https://runwildmychild.com/100-spring-outdoor-activities-for-kids/>



Spring is in the air! As the weather warms back up and the sun stays up later, it's the perfect time to get those kids outside. After a long winter with bitterly cold temperatures and lots of time spent inside, we couldn't be more excited to get outside into the sunshine, get dirty, and be active.

It's so important to make sure your child gets plenty of fresh air, exercise, sunshine, and 'Vitamin N' (nature). To help out, we've put together this giant comprehensive list of 100+ spring outdoor activities for kids! The items, activities, acts of service, treats, experiments, and crafts on this list are guaranteed to get you outside and active, creating and exploring. Here are some examples!

1. Puddle jumping

Jumping in a puddle is an absolute classic quintessential rite of passage for any child. So often kids are asked to refrain from getting wet and muddy. Give them the gift of freedom to explore and get as messy as they want for a day. Dress them in their rain boots and whatever else you don't care getting wet (plenty of layers if it's still cold) and encourage them to splash! They'll be so excited about the opportunity and will remember this for a lifetime.



2. Host an outdoor tea party

Outdoor tea parties can be fun any season of the year. Spring is a perfect time though, with fresh green grass and flowers everywhere. Have your kids dress up in something fun and fancy! Pull out a little table and chairs into the backyard and whip up some tea and a light snack. Try traditional cucumber sandwiches or make it a sweet tea time with cookies or cake. Depending on the age and fanciness of your guest, break out the good china and really impress them! If your kids don't like tea, substitute lemonade, sparkling water or fruit-infused water.

3. Make a flower bouquet

Spring is a wonderful time for finding and picking flowers. Bring a pair of scissors on your walk and snip a few flowers for a bouquet (as long as you have permission). Springtime flowers could include daffodils, tulips, orchids, primrose, snowdrops, and violets. Wildflowers make beautiful and colorful arrangements. But only take a few and make sure to leave plenty for the bees!

4. Dig for worms

There's something about discovering a worm right under your feet that blows kids' little

minds! Find an outdoor area where you can dig. The best time to find worms near the surface is after a rain when the soil is moist. Give each kid a shovel or garden spade and encourage them to dig into the dirt. Once you have a large scoop of dirt, break it up gently with your fingers, carefully looking for worms. If you find a worm, gently let your child hold it in their palm and let the worm wiggle around. When you're finished observing the worm, you can set it free in a garden, compost area or watch it return to the soil.



Here are more activities included on the list – visit the website above for more details!

- Put out the hummingbird feeders
- Visit a tulip field
- Play disc golf
- Go fishing
- Mud faces on trees
- Chase a rainbow
- Go fly a kite
- Make spring flower suncatchers
- Plant a tree
- Grill outside
- Dandelion tea
- Explore a pond
- Start seedlings in eggshells



- Make a fairy garden
- Make seed paper
- Hatch baby chicks
- Make a rain gauge
- Blow bubbles
- Glass whistling
- Flower paintbrushes
- Build a garden
- Start a compost bin
- Watch pollinators
- Go for a nature hike
- Decorate a flower pot
- Watch for turtles
- Start a nature collection
- Have a spring picnic
- Make windchimes
- Create a treasure hunt
- Spring nature journal
- Listen for woodpeckers
- Observe Earth Day
- Paint with mud



Owl Pellets – Like a Hairball!

www.audubon.org



Because owls often swallow mice, voles, small birds, and other prey whole, their digestive system has to deal with bones, fur, and feathers. The owl's gizzard performs a kind of sorting operation: soft tissues pass through to be digested, while indigestible sharp and hazardous bits like bones, teeth, and fur are formed into an oval mass. They pass back up the digestive system and are regurgitated as a **pellet** some hours later, often while the owl is at roost. (Pellets are similar to a dog or cat coughing up a hairball from grooming.)



It's clear that this Great Horned Owl has fed recently. It isn't spitting up something it's found unsavory; rather, it's casting a pellet. While an owl may tear open a large bird or mammal with its sharp, curved beak and then dig into the meat much as a hawk or falcon would do, smaller prey gets swallowed whole - fur, bones, teeth, and all.

The digestible parts of the prey animal are liquefied in the first of the owl's two stomach chambers and further processed in the gizzard on their way to the gut. The above-named indigestibles (the list is far from comprehensive and varies with the specific prey!) are compacted into a neat little pellet which the owl regurgitates.



What's Stressing Wisconsin's Wildlife?

<https://wicci.wisc.edu/2021-assessment-report/land/whats-stressing-wisconsins-wildlife/>



From www.sharonchristensenart.com

Wisconsin is world-renowned for its diversity of wildlife. Our outdoor recreation and tourism economy, which is vital to rural communities, depends on access to this diversity of species. To Tribal Nations that live within our state boundaries, wildlife and subsistence hunting and gathering are essential to their spiritual, cultural, and physical well-being.

The recently published report from the [Wisconsin Initiative on Climate Change Impacts \(WICCI\)](https://wicci.wisc.edu/2021-assessment-report/land/whats-stressing-wisconsins-wildlife/) shows that warmer winters, less snow, and new pests are stressing iconic Wisconsin species. The last two decades have been the warmest on record in Wisconsin and the past decade has been the wettest. Climate change is leading to earlier springs, milder winters, and delayed falls. Many species are shifting their historic ranges and migration patterns in response to these changes.

Not all species are able to adapt, however, leading to a mismatch between habitats and the migratory species that depend on them. Reducing barriers to wildlife movement and creating resilient habitat spaces will be key for wildlife species as they try to adjust to climate change. Impacts to a few keystone species illustrate how a warming climate is stressing Wisconsin wildlife. Ruffed grouse and snowshoe hares that depend on a snow-covered landscape to survive Wisconsin winters are increasingly at-risk as winters warm and the period of snow cover shortens.



Warmer air and water temperatures, along with extreme fluctuations in lake levels, have disrupted loon reproduction by changing the availability of nesting habitat and increasing the risk of black fly outbreaks during the breeding season.



Warmer waters, extreme rains, and rapid lake level fluctuations are impacting wild rice beds that are important to Ojibwe tribes in Wisconsin and the wildlife species that use them.



"Climate impacts are increasing the risk and harm to wildlife already stressed by habitat loss and degradation, pollution, and disruptions from non-native species. Aligning restorations and habitat management can help species adapt to changing climate conditions." - WICCI Wildlife Working Group

But there is hope. The WICCI Wildlife Working Group (<https://wicci.wisc.edu/>) recommends activities to help wildlife as the climate continues to warm, including adjusting harvest regulations for climate-vulnerable species. There is hope for the future, but it's up to us.

The Wisconsin Initiative on Climate Change Impacts (WICCI) is a statewide collaboration of scientists and stakeholders formed as a partnership between UW-Madison's Nelson Institute for Environmental Studies and the Wisconsin Department of Natural Resources.



WICCI's goals are to evaluate climate change impacts on Wisconsin and foster solutions. Gifts to the WICCI Program Fund provide general, discretionary program support and enhance and expand WICCI's teaching, research, and public service roles. Gifts also support partnership-building activities, including faculty, staff, and student recruitment, retention, and morale.

Our working groups conduct science-based assessments of climate change impacts on specific regions, ecosystems, communities, and industries in Wisconsin and foster solutions and adaptation strategies. Each group is made up of scientists, experts, and practitioners who contribute to WICCI's thematic breadth of air, land, water, and people.



Keep Wisconsin's Wildlife Wild!

<https://dnr.wisconsin.gov/topic/WildlifeHabitat/orphan>



Celebrate Keep Wildlife Wild Week, April 3-10, 2023! Winners of the fourth-annual poster contest will be announced during Keep Wildlife Wild Week. Check out the Resources Library and other Educational Materials on the website above for information on how you can help keep wildlife wild.

During the warmer months of spring and summer, the frequency of human-wildlife encounters increases, especially those involving young wild animals. While most of these encounters are harmless, there are times when well-intentioned people interfere in wildlife situations because they incorrectly assume a young animal is orphaned. *For the protection of all young wildlife, please do not revisit a nest site and do not let dogs and cats near the area.*

When should you contact a wildlife rehabilitator?

- The animal's parent is dead or no longer in the area (trapped and relocated).
- The animal has been attacked by a predator (dog, cat, other wild animal).
- The animal is bleeding and appears injured (bruises, punctures, cuts, broken bones).
- The animal is emaciated, very weak, cold, or soaking wet.
- The animal has diarrhea.
- There are flies, fly eggs, maggots, or many ticks, lice, or fleas on the animal.
- The animal is in a dangerous location (busy street, parking lot).

You can see a list of licensed wildlife rehabilitators by county at <https://dnr.wisconsin.gov/topic/WildlifeHabitat/directory.html>.



Why Should You Keep Wildlife Wild?

1. **Stress:** People and domestic animals are perceived predators and cause stress to wild animals that cause serious health problems, or even death.
2. **Diet:** Wild animals have specialized dietary needs that are not easily met in captivity.
3. **Disease:** Wild animals carry many different diseases and parasites, some of which are transmissible to pets and even humans.
4. **Habituation & Non-natural Behavior Development:** Wild animals need to learn normal social behavior from their own species and non-normal behaviors learned from humans or pets can be fatal if the animal is released back into the wild.
5. **It's Illegal:** Most wild animals are protected under state and federal laws and cannot be taken from the wild or possessed by unauthorized citizens.



EPA Proposes Limits on Toxic 'Forever Chemicals' in Drinking Water

Excerpts from <https://www.wpr.org/epa-proposes-limits-toxic-forever-chemicals-pfas-drinking-water>



The Environmental Protection Agency on Tuesday [released proposed limits for harmful "forever chemicals"](#) in drinking water to the lowest levels they can be measured, saying it will save thousands of lives and drastically reduce PFAS-related illnesses.

"EPA's proposal to establish a national standard for PFAS in drinking water is informed by the best available science, and would help provide states with the guidance they need to make decisions that best protect their communities," EPA Administrator Michael Regan said in a news release. "This action has the potential to prevent tens of thousands of PFAS-related illnesses and marks a major step toward safeguarding all our communities from these dangerous contaminants."



The proposed limits are less stringent than new health advisory levels for four PFAS, or per- and polyfluoroalkyl substances, released last June by the EPA.

The EPA is proposing individual limits for the two most widely studied PFAS chemicals — PFOA and PFOS — at 4 parts per trillion. That's more than 17 times lower than [Wisconsin's drinking water standard for PFAS](#) — 70 parts per trillion — that took effect last summer. The EPA wants to regulate the combination of four other PFAS, including PFNA, PFHxS, PFBS and GenX chemicals. Steve Elmore, the program director for drinking water and groundwater at the Wisconsin Department of Natural Resources, said the agency along with the Department of Health Services will review the proposed limits and monitor the EPA's rulemaking until final drinking water standards are released.

"We will then proceed with state rulemaking to incorporate these drinking water maximum contaminant levels into state law, and then continue on with implementing them with the public water systems that they apply to in the state," Elmore said. In the meantime, Wisconsin's drinking water standard for PFAS hasn't changed, and the agency recommends public water supplies take voluntary steps to limit the chemicals in drinking water at or above state health advisory levels.

Water systems, public health professionals, the public and others will be able to comment on the EPA's proposal. Federal environmental regulators hope to issue a final rule by the end of this year or early next.

PFAS are a [class of thousands of synthetic chemicals](#) widely used by industry since the 1940s.

They've been used in everyday products like nonstick cookware, stain-resistant clothing, food wrappers and firefighting foam. The chemicals don't break down easily in the environment. Research shows high exposure to PFAS has been linked to kidney and testicular cancers, fertility issues, thyroid disease and reduced response to vaccines over time.

The limits are the first proposed standards for the chemicals in drinking water since industry first alerted the EPA to the health hazards of PFAS nearly 25 years ago. Documents show companies like 3M knew PFAS could be toxic and posed health risks as far back as the 1960s.



Foam is seen at Olbrich Park in Madison, Wis., where PFAS-tainted Starkweather Creek enters Lake Monona. Public Health Madison and Dane County has warned residents not to swallow the foam — or allow their pets to do so.

The Wisconsin Chapter of the Sierra Club and Clean Wisconsin called the EPA's proposal a significant step in addressing PFAS contamination. "These proposed limits, if they are finalized, will mean safer drinking water," Scott Laeser, water program director for Clean Wisconsin, told WPR. "I think anyone who has been paying attention to the science that's been coming out lately about the health risks that PFAS poses expected standards along these lines."

In Wisconsin, PFAS have been detected in more than 50 communities from small towns like Peshtigo and Campbell to larger cities like Eau Claire, Wausau and Madison. The DNR is actively investigating around 100 sites for PFAS pollution, [according to its website tracking environmental cleanups](#).

Industry groups like Wisconsin Manufacturers and Commerce, or WMC, supported the state's drinking water standard for PFAS based on the EPA's previous health advisory level of 70 parts per trillion released in 2016. Even so, they've questioned the science behind more restrictive limits on the chemicals. State industry groups have also argued inconsistent state, federal and international standards demonstrate a lack of consensus on appropriate limits for the chemicals.

Both industry and water groups have highlighted concerns over the cost of complying with more stringent standards. The American Water Works Association estimates treatment of PFAS in drinking water could cost up to \$38 billion. In small communities, advocates for rural Wisconsin water systems have said the cost to replace a contaminated well may run up to \$2 million.

Chris Groh, executive director of the Wisconsin Rural Water Association, said his members will need financial assistance to comply with the EPA's proposal if passed. "This limit is going to cost them money from start to finish in the process: engineering, testing, monitoring, treatment,

treatment disposal," Groh said.

Cities like Wausau and Eau Claire are planning to spend tens of millions of dollars on systems to treat the chemicals. Wausau Mayor Katie Rosenberg said the city's new treatment plant has a temporary solution to treat for PFAS after the chemicals were discovered at elevated levels in all six city wells last year. She said the city plans to install a permanent granular activated carbon filtration system by the end of next year, which is expected to cost \$17 million or more. Rosenberg said the new system will be able to meet the EPA's proposed standards. Even so, the city's roughly 14,000 water ratepayers are expected to pay an extra \$50 on their quarterly bills to pay for it.

Meanwhile, the EPA's proposed limits wouldn't apply to private wells that draw from groundwater — a source of drinking water for one third of state residents. State protections are currently lacking. The Wisconsin Natural Resources Board failed to pass limits on the chemicals in groundwater when it [approved drinking water standards](#) for PFAS at levels weaker than those recommended by state health officials. The town of Peshtigo has been fighting for more than five years to address PFAS contamination of private wells stemming from the use of firefighting foam that contained the chemicals at Tyco Fire Products' fire training facility in Marinette (below).



Cindy Boyle, town of Peshtigo chair, said the EPA's announcement nearly brought tears to her eyes. "When you have a federal level set that is reflective of this kind of number, it allows the argument for groundwater safety to be that much stronger," Boyle said. "So, we're very encouraged."

In December, the Natural Resources Board voted unanimously to allow Wisconsin environmental regulators to once again begin crafting health-based standards for PFAS in groundwater. The DNR has said it would take proposed limits from the EPA into account when developing standards.

President Joe Biden's administration is devoting \$10 billion from the bipartisan infrastructure law to address emerging contaminants like PFAS. Gov. Tony Evers also recently proposed more than \$100 million in the next two-year state budget to address PFAS.

Evers' plan would support increased testing and monitoring, funding to provide temporary drinking water to affected households and 11 new positions at the DNR to tackle the chemicals. Republican lawmakers like Sen. Rob Cowles of Green Bay and Sen. Mary Felzkowski from Irma have indicated they may be willing to spend money on PFAS under the budget to address the chemicals.

Visit the [Wisconsin DNR website](#) to learn more about measures undertaken to mitigate PFAS contamination in Wisconsin, including creating and implementing the [PFAS Action Plan](#).

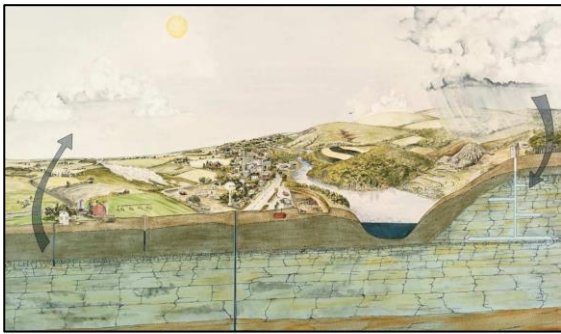


Wisconsin Groundwater – A View Under Wisconsin

<https://storymaps.arcgis.com/stories/c6b6d2dbe67540bdb4f5585376e89492>

Do you know how much groundwater there is in Wisconsin? **It's more water than you'd find in Lake Michigan and enough to cover Wisconsin in 100 feet of water!**

- About 70% of people in Wisconsin get their drinking water from groundwater.
- Groundwater is essential to make the goods Wisconsin is famous for. Industries such as brewing, cheese making, dairy farming, meat processing, and fruit and vegetable processing all rely on groundwater.
- Fish and wildlife depend on clean water to thrive. Many of the streams and lakes that they live in and drink from are fed by groundwater sources.



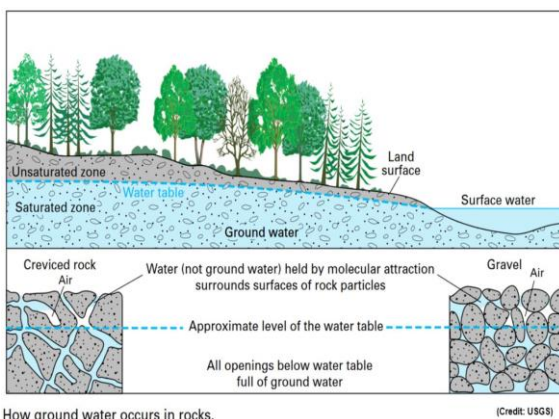
The Water Cycle

Hydrogeology (hydro-water and geology-the study of the Earth) studies how groundwater moves and is distributed in the soil and rocks below the Earth's surface. Pictured here is [the water cycle](#), which shows how water moves across and through the Earth's surface and how land use can affect water movement through the subsurface.

Groundwater is water that fills up pores and cracks in the soil and rocks underneath our feet. Groundwater can be found almost everywhere you look – beneath oceans, hills, valleys, mountains, lakes, and even deserts.

Intro to Hydrogeology

Groundwater starts as precipitation (either rain or snow) that falls on the Earth's surface and slowly seeps downward through unsaturated soil and rocks until it reaches the saturated zone. This process is known as *groundwater recharge*, and the top of the saturated zone is called the water table (see figure below or [click here](#)). The water table can be very shallow, even at the land surface in some cases, or very deep, sometimes hundreds of feet below the land surface.



Once recharge reaches the water table, it becomes part of the groundwater system. Groundwater flows toward discharge areas such as streams, lakes, springs, and wetlands. That movement of groundwater is very slow, often moving only inches per day, and sometimes even as slow as inches per decade. The rocks and soils where groundwater flows are called **aquifers**. The basic properties of

the aquifer control how quickly and how easily groundwater moves through the aquifer. Aquifers with a lot of open pore space or large fractures allow groundwater to move more quickly than tight, compacted aquifers. Wisconsin has four main aquifer formations: the Sand and Gravel Aquifer, the Silurian-Devonian Dolomite, the Cambrian-Ordovician Sandstone and the Precambrian Bedrock.

Sand and Gravel

The Sand and Gravel formation covers most of the state, except for some parts of southwest Wisconsin. It consists mostly of sand and gravel deposited in river valleys and/or from past glaciations. The glacial deposits are loose or [unconsolidated](#), so they often are referred to as soil – but they include more than just a few feet of topsoil. These deposits can exceed 300 feet thick in some places in Wisconsin.

[Glaciers](#), formed by the continuous accumulation of snow, played an interesting role in shaping Wisconsin's geology. Snow turned into ice, which reached a maximum thickness of almost two miles. The ice sheet spread over Canada, and part of it flowed in a general southerly direction toward Wisconsin and neighboring states. This ice sheet transported a great amount of rock debris, called glacial drift.



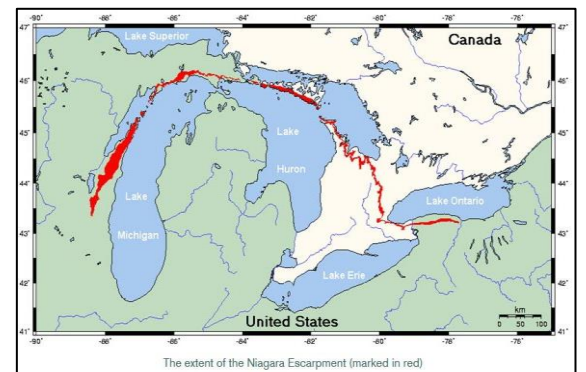
As the ice melted, large amounts of sand and gravel were deposited, forming "outwash plains." Kettles were formed in the outwash where buried blocks of ice melted; many of these are kettle lakes. Evidence of this can be seen in the [Northern Kettle Moraine State Forest](#) of Sheboygan and Fond Du Lac County. The youngest glacial deposits were placed during the most recent glaciation, which ended about 10,000 years ago.

The sand and gravel outwash plains now form some of the best aquifers in Wisconsin. Many of the agricultural lands in central, southern and northwestern Wisconsin use the glacial outwash aquifer for irrigation. While some glacial deposits are useful aquifers, in some places large glacial lakes were formed and over time, accumulated thick deposits of clay. These old lake beds of clay do not yield or transmit much water.

Material deposited directly by glacial ice is called till. Because of how it was deposited, till is typically poorly sorted, meaning it contains a mix of fine-grained and coarse-grained materials, which does not transmit groundwater as readily as a well-sorted outwash deposit.

Silurian-Devonian Dolomite

The Silurian-Devonian dolomite occurs in eastern Wisconsin from Door County to the Wisconsin-Illinois border. These rocks are part of what is called [the Niagara Escarpment](#) – a wide arc stretching from Wisconsin, through Michigan's Upper Peninsula, and across Ontario, Canada to Niagara Falls, New York. These rock formations were deposited about 430 million years ago as a lime mud on an ancient sea floor. Dolomite is a carbonate rock similar to limestone, it holds groundwater in interconnected cracks.



The water yield from a well in this aquifer mostly depends on the number of fractures the well intercepts. As a result, it's not unusual for nearby wells to vary greatly in the amount of water they can draw from this layer. [The fractures in the dolomite, along with the shallow soils above the rock, also make this aquifer highly susceptible to contamination.](#)

The Maquoketa shale layer beneath the dolomite was formed from clay minerals that do not transmit water easily. Therefore, it is important as an *aquitard*, or barrier, between the Silurian-Devonian aquifer and the Cambrian-Ordovician sandstones below.

Cambrian-Ordovician Sandstones

The Cambrian-Ordovician sandstone aquifer is actually a series of interbedded sandstones, shales, limestones, and dolomites. But groundwater primarily flows through the sandstone units. This aquifer stretches across the upper Midwest, from Minnesota and Iowa to Michigan's Lower Peninsula. The rocks are slightly tilted that are at the land surface in southern Wisconsin are over 15,000 feet below ground in central Michigan. The Cambrian-Ordovician rocks were deposited between 600 and 425 million years ago when the current day central continental US was covered by a shallow sea.

Precambrian Bedrock

The Precambrian Bedrock of Wisconsin is composed of various rock types formed during the Precambrian Era, which lasted from the time the Earth cooled more than 4 billion years ago, until about 600 million years ago.

During this lengthy period: sediments, some of which were rich in iron and now form iron ores, were deposited in ancient oceans; volcanoes



Continued next page



Meet the Chickadees!

<https://www.birdsandblooms.com/birding/bird-species/all-about-chickadees/>



Watching chickadees flit through the treetops is like witnessing master acrobats at work. These adorable birds duck and dodge through branches as they hunt down small insects. Not only are these birds super cute, they also have friendly personalities.

Types of Chickadees in North America

There are seven different species of chickadees in the U.S. All of them have snazzy dark caps and black bibs:

- Black-capped chickadee
- Mountain chickadee
- Boreal chickadee
- Carolina chickadee
- Gray-headed chickadee
- Mexican chickadee
- Chestnut-backed chickadee



[Black-capped chickadees](#) are found at feeders throughout much of the continent, from Alaska and Canada to the mountains of New Mexico and Tennessee.

If folks around you are speaking with a southern drawl, chances are you're in [Carolina chickadee](#) (below) territory, in the Southeast, Deep South and lower Midwest. The Carolina chickadee's geographic range overlaps the black-capped. Listen and look for differences. Its *chick-a-dee-dee* call is higher and faster than the black-capped. Also, its white cheek darkens to pale gray toward the nape, while the black-capped's is completely white, with more white on its wing feathers.



If you notice a chickadee with a white stripe on its head, it's probably a [mountain chickadee](#) (below). These little birds forage in high coniferous Western forests, from Canada to near the Rio Grande. They nest in dead aspens because the soft wood is easy to excavate. Like all other chickadees, these birds stash food away for winter, caching nuts and seeds.



In the Northwest and along the Pacific Coast, you'll find [chestnut-backed chickadees](#) at home in cities and towns as well as dense evergreen forests. The *chick-a-dee* call of this species is higher and thinner than the others, almost squeaky and with fewer *dees*.

Black-capped, Carolina, mountain and chestnut-backed are the species you're most likely to see in the U.S. But there are three others to cross off of your birding bucket list: boreal, Mexican and gray-headed chickadees. The [boreal forests](#) of Canada, Alaska and edges of the northeastern states are home to chickadees of the same name, a brown-capped bird with a slow, scratchy *chick-a-dee* call. In contrast, you'll have to head far south to the pine forests of the Chiricahua Mountains in Arizona and the Animas Mountains in New Mexico, which are the only places in the U.S. to see the Mexican chickadee's big black bib and hear its hoarse *chick-a-dee*.

The rarest of all seven U.S. species is the gray-headed chickadee. It lives in such an inaccessible part of the Arctic Circle in Alaska that ornithologists still don't know much about it. These birds roam stunted balsam poplars and spruces and sings *shick-a-day*, its own version of the usual song.

Chickadee Song

All types of chickadees call a version of their own name. The call varies in pitch, speed and clarity depending on the species, but the easiest version to learn to recognize is that of the black-capped chickadee with its *chick-a-dee-dee-dee* call. Most chickadees, the black-capped included, are talkative, with a whole repertoire of high, wheezy notes in addition to the trademark call. In spring, black-cappeds sing a loud two- to three-note *fee-bee* mating call. A super high-pitched *seeee* is a warning that there is a predator around. All chickadees within hearing distance freezes upon hearing it. That watchfulness may contribute to the chickadee's surprisingly long-life span—about 10 years!



What Do Chickadees Eat?

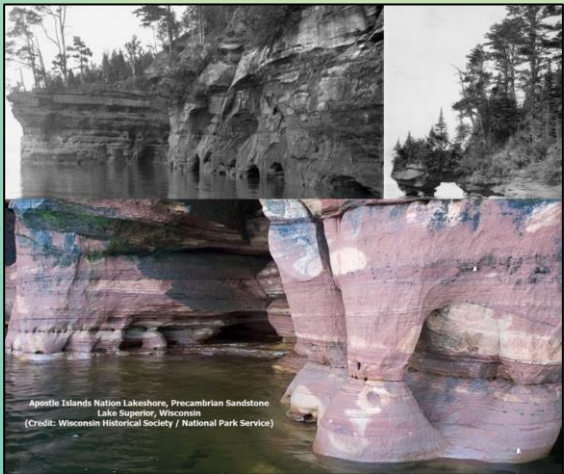
Chickadees are always on the move, picking off insects of any stage - eggs, larvae, pupae, adults - from leaves and branches. Pairs remain together year-round. From fall through early spring, the birds form small roaming flocks with titmice, nuthatches, warblers, brown creepers, kinglets and the occasional woodpecker.

All species can be seen within their respective range throughout the year. They visit backyard bird feeders less often in spring and summer, when insects are at their peak. However, chickadees lay as many as 10 eggs per year, and that's a lot of mouths to feed. At the feeder, chickadees will eat sunflower seeds, but peanuts and other chopped nuts are truly irresistible. High-fat suet and peanut butter are also popular.

Groundwater, continued

spewed forth ash and lava; mountains were built and destroyed, and molten rocks from the Earth's core flowed up through cracks in the upper crust. These are the "basement" rocks that underlie the entire state of Wisconsin.

The Precambrian Bedrock located in north part of Bayfield and Douglas counties is Precambrian Sandstone dating back to 1.1 billion years ago. This Precambrian Sandstone can be viewed in and around the Apostle Islands National Lakeshore.



Precambrian Crystalline Bedrock

The Precambrian Crystalline rocks remaining today have a texture of interlocking mineral crystals, meaning groundwater does not flow through pores in these rocks. Instead, groundwater flows through cracks and fractures. Some cracks and fractures are found within this formation and store water. The cracks and fractures storing and transmitting water in these dense rocks are not spaced uniformly. Some areas contain numerous fractures while others contain very few.

To obtain water, a well must intersect some of these cracks; the amount of water available to a well can vary within a single home site. The crystalline bedrock aquifer often cannot provide adequate quantities of water for larger municipalities, large dairy herds, or industries.

Many wells in the Crystalline Bedrock aquifer have provided clean water. However, most of these wells do not penetrate deeply into the rock. Water samples from deep mineral exploration holes near Crandon, Wisconsin, and deep iron mines near Hurley, have yielded brackish (salty) water.

The following sources are available for further investigation:

- [Bedrock Geology of Wisconsin](#)
- [Depth to Bedrock in Wisconsin](#)
- [Ice Age Deposits of Wisconsin](#)
- [Glacial Deposits of Wisconsin](#)
- [Landscapes of Wisconsin](#)
- [DNR's Water Use Story Map](#)
- [DNR's Water Use Web page](#)

In addition, each March celebrates National Groundwater Week -

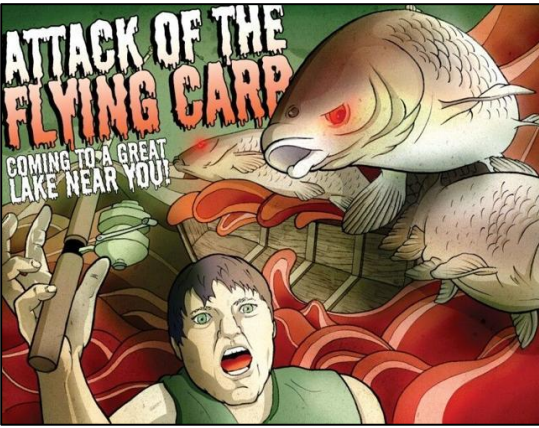
<https://www.ngwa.org/get-involved/groundwater-awareness-week/groundwater-awareness-week>



Attack of the Crayfish Invaders!

From Wisconsin Natural Resources Magazine | Spring 2023

https://issuu.com/wisconsinnaturalresources/docs/wnr_spring_2023_singles/s/21003451



There are times when aquatic invasive species seem like something from a horror movie. Species such as bighead and silver carp, invasive water garden plants and nonnative crayfish can self-clone and multiply with astonishing speed and precision leveraged to destroy native fish, wildlife and plants.

All too often, these damaging invasive species find passage into the state through vendors who know what they're importing is illegal. But they also can hitch a ride with consumers who aren't aware that what they're buying is an invasive species. The results can be plant-choked ponds, wiped-out native fish and wasted remains of once-diverse aquatic plant habitats. Any number of aquatic invasive species can have this effect.

However, crayfish, whether from a well-intended crayfish boil or an aquarium pet setup, have been the focus of recent DNR work involving invasive species enforcement under Chapter NR 40 (Wis. Adm. Code).

Prohibited Pets

Wisconsin forbids keeping live nonnative crayfish species, a rule meant to minimize the importation and possible release of invasive species. And yet, crayfish are among the most common invasive species in the pet industry.



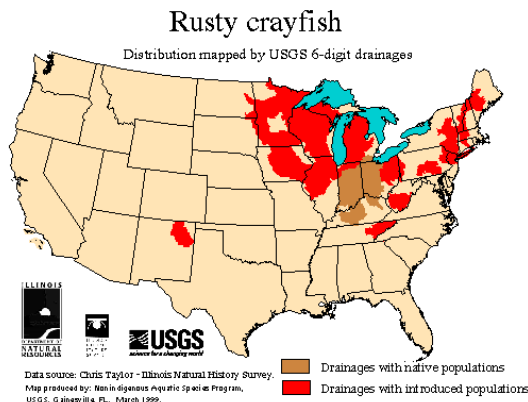
In one case, DNR wardens were alerted of possible illegal crayfish sales at a Milwaukee pet store. An investigation discovered several companies from neighboring states had supplied dozens of Wisconsin pet stores with about 950 invasive crayfish during a two-year period.

The primary distributor and many of the pet stores had already been notified by the Wisconsin DNR about invasive species rules in the state after an earlier illegal invasive species delivery. In all, the investigation resulted in 125 convictions against the primary distributor and another 22 against 10 other defendants.

In 2020, wardens investigated a Green Bay man who was raising the world's only self-cloning crayfish species, the marbled crayfish, and shipping them around the country. It takes just a single marbled crayfish to start a new infestation that can outcompete native species. It turned out the man's supplier in Ohio was shipping these harmful invasive crayfish to 36 states. The investigation led to the seizure of more than 1,000 self-cloning crayfish around the country, with the two distributors convicted in state and federal courts.

Seeing Red

Native to northern Mexico and the southern United States, red swamp crayfish often are shipped live for use in the popular crayfish boil. But the species is illegal in Wisconsin because it can have damaging effects on the state's native aquatic life. Before the feast, they might be kept in a small pool and sometimes escape and wander off. Or leftover crayfish that aren't boiled might get dumped into a nearby waterbody.



In 2009, residents in southeast Wisconsin reported "mini-lobsters" crawling in their yards. These turned out to be invasive red swamp crayfish that had infested three neighborhood ponds, costing an estimated \$800,000 to eradicate them.

In a more recent case, the Dane County Circuit Court last August convicted a Louisiana seafood wholesaler on 10 counts related to illegally supplying live red swamp crayfish for sale in Wisconsin. These were the first-ever criminal convictions under the state's invasive species law related to the importation of live red swamp crayfish. The investigation revealed significant illegal importation of live red swamp crayfish throughout the Great Lakes region.



Already widespread in the state, the invasive rusty crayfish may be harvested with a small game or fishing license, if none are allowed to escape.

Boil Legally

To avoid potentially expensive or even disastrous environmental consequences tied to the invasive red swamp crayfish, it's vital to use only native species for any crayfish boil in Wisconsin. Native crayfish species may be harvested and brought home alive.

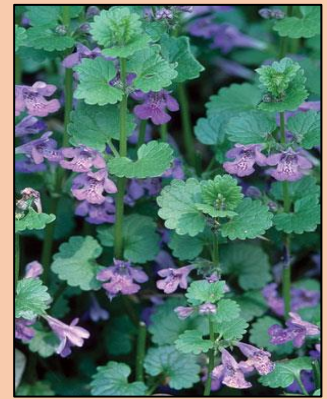
The rusty crayfish, an invasive species already widespread in the state, also may be harvested and brought home alive if none are allowed to escape. Harvesting wild Wisconsin crayfish requires a small game or fishing license.

For more about invasive species in Wisconsin, including nonnative crayfish and other aquatic invasive species, see
<https://dnr.wisconsin.gov/topic/Invasives>.



Invasive Species – Ground Ivy

<https://www.invasive.org/alien/pubs/midatlantic/gihe.htm>



Background

Also known as gill-over-the-ground and creeping Charlie, Cat's Foot, Field Balm, Gill-over-the-hill, Hay Maids, Runaway Robin. It was introduced into North America from Eurasia as an ornamental or medicinal plant, as early as the 1800s.

Distribution and Habitat

Ground ivy occurs throughout the U.S. in all of the lower 48 except for Nevada, Arizona and New Mexico and has been reported to be invasive in natural areas from Wisconsin to Connecticut, south to Tennessee and North Carolina. It is common in moist areas such as floodplains, low woods and disturbed sites and is a significant weed in lawns. It grows on damp, heavy, fertile and calcareous soils and does not tolerate highly acidic or saline soils.

Ecological Threat

Ground ivy is a vigorous grower that spreads across the ground forming dense patches that push out native plants. It is toxic to many vertebrates, including horses, if eaten in large quantities either fresh or in hay.

Description and Biology

- ✓ **Plant:** perennial scrambling herbaceous plant; stems square (4-sided) and fragile; flowering stems can reach a height of 1 ft.
- ✓ **Leaves:** opposite, heart-shaped with scalloped margins, about an inch across and have a musky mint odor when crushed.
- ✓ **Flowers, fruits and seeds:** flowers are about 1/2-3/4 in. long, tubular, lavender, paired and emerge from leaf axils; flowering occurs March to July; each flower produces a pod containing four smooth tan seeds.
- ✓ **Spreads:** by vegetatively by creeping stems and to a lesser degree by seed; shallow fibrous roots form at the base of the plant and at leaf nodes on the stem.
- ✓ **Look-alikes:** henbit (*Lamium amplexicaule*), purple deadnettle (*Lamium purpureum*), first-year garlic mustard (*Alliaria petiolata*), and possibly other small herbaceous plants with opposite leaves and blue flowers.

Prevention and Control

Once established, this plant is difficult to control because it is hard to remove all root and stolon fragments. Seed banks may also remain viable after control methods are used. Small patches can be pulled by hand or using a rake when the soil is damp. All roots must be removed. Large infestations can be effectively controlled using systemic herbicides like glyphosate (see [Control Options](#)). A rust fungus *Puccinia glechomatis* attacks ground ivy causing severe damage or death and may hold some potential for biological control.

For more information:

<https://hort.extension.wisc.edu/articles/creeping-charlie/> &
<https://mbgna.umich.edu/invasive-of-the-week-creeping-charlie/>



Spring Flowers Bring...Beneficial Spiders?! More About our Friendly Neighborhood Garden Spiders

Excerpts from <https://hort.extension.wisc.edu/articles/garden-spiders/>

Ok, so many people don't like spiders. It's understandable. They are weird looking, hairy, and have way too many legs and scary fangs. But they are very important as predators in ecosystems and help control insect and invertebrate populations. And they are fascinating as a group of animals. And seriously, who doesn't think a spider wearing a water drop hat isn't cute???



<https://mymodernmet.com/uda-dennie-spider-waterdrop-hats/>

Spiders are arthropods belonging to the order Araneae in the class Arachnida. The name *arachnid* comes from Greek mythology. The princess Arachne challenged the goddess Athene to a weaving contest. When Arachne lost, she was turned into a spider and destined to weave forever. There are more than 35,000 named species of spiders in the world with 3,000 of them making their home in North America.

Spiders differ from insects in that spiders have 8 legs, not 6; they also have only 2 body regions (a cephalothorax and abdomen) instead of 3 (head, thorax, abdomen); and they lack wings and antennae, both of which insects possess. Finally, spiders possess unique organs beneath their abdomen called *spinnerets*. These 6 spinnerets allow the spider to produce silk throughout their entire life while only a few insects can produce silk, and then only during specific life stages.

Spiders have unique mouthparts comprised of *chelicerae*, or jaws, that end in fangs. Although most spiders are venomous, they are harmless to humans with a few exceptions - the black widow and the brown recluse being the most common. The venom produced by spiders is used to paralyze and kill their prey. Spiders rarely attack humans unless provoked and even then, they are more likely to flee than fight. People often mistakenly blame spiders for bites caused by fleas, ticks, or mites. Most spiders don't possess mouthparts capable of breaking human skin.



The crab spider *Misumena vatia* with a bee

Most spiders complete a single generation in one year. However, there are a few species that may live for several years. A typical spider's life cycle begins when egg masses are laid in debris

in the fall. These eggs may overwinter as is or the individual eggs within may hatch into spiderlings that remain protected in the egg mass until spring. After laying an egg mass, the female spider dies. In the spring, spiderlings move from their overwintering site by crawling or 'ballooning', a process by which they produce a silken thread on which they are carried by the wind.



Spiders feed on a wide variety of insects and are therefore considered beneficial in the garden when they eat pests including aphids, caterpillars, cucumber beetles, flies, grasshoppers, leafhoppers, plant bugs, and thrips. However, most spiders are opportunistic and eat whatever they catch, rather than targeting specific pests, and may capture beneficial insects such as bees or tachinid flies.

Because of their generally beneficial nature, garden spiders should be conserved. Avoid the use of broad-spectrum insecticides or insecticides containing pyrethrum or synthetic pyrethroids. Other practices that can help spiders include leaving a portion of the garden covered in organic mulch or planting a cover crop to provide an overwintering site for egg masses.

Spiders capture their prey in three main ways. **The largest group constructs a web** of some sort to capture their prey. These web spinners typically are found on or near their webs, laying in wait for their unsuspecting prey. They are typically more delicate in nature than their wandering relatives. **The next most common method is that of the hunting spiders.** They are robust and mobile, and do not wait for a meal to come to them but actively track down their prey. Although they do not construct a web to capture their prey, they may construct a silken refuge. **The last group is the ambush hunters,** who sit motionless until their prey comes within easy grasp and then pounce (as at left).



Orb web at left; spider in funnel web at right

Some of the most common spiders found in the garden in Wisconsin are argiope or orb weaver spiders, barn spiders, jumping spiders, wolf spiders, and crab spiders.

Argiope (rhymes with calliope) spiders belong to the family Araneidae. The name "argiope" is typically associated with the black & yellow garden spider. They are commonly seen in gardens and fields on shrubbery and tall flowers in late summer and fall. They are moderate to large in size with an unusually large, and often oddly-shaped abdomen, and may be brightly

colored. Their webs are particularly large, up to 1 foot in diameter and are characterized by the white zig-zag band of silk that runs down the center of the web.

Another member of the Araneid family is the **barn spider**. Barn spiders are relatively large web spinners reaching up to 1 inch in size at maturity and are brownish in color. They spin their webs in shaded areas around buildings, caves, or cliffs. The genus *Araneus* contains a large number of species that look like marbles - some of which are orange or cream-colored.

Grass spiders are moderately-sized, brownish-grey weavers of funnel-shaped webs. Their webs can often be found around building foundations, on low-growing shrubs, or in lawns. The grass spiders themselves lay in wait in the funnel. A unique characteristic of the webs woven by grass spiders is that the threads are not sticky as they are in the case of barn and argiope spiders, so the funnels are just to direct the prey to the spider instead of entangling it.

The **wolf spider** is one of the hunting spiders that actively pursues its prey. They are large, brown or grey with white markings, and hairy, resembling small tarantulas. Wolf spiders belong to the family *Lycosidae* which is derived from the Greek word "lycosa" that means "wolf." They are ground-dwellers and active by day or night in a wide range of habitats. Many species burrow into the ground or beneath rocks to wait for their unsuspecting prey.



Crab spiders get their name because their first four legs are larger than the hind legs and because of their capability of walking forward, backward, or sideways. Unlike the wolf spider, crab spiders don't actively pursue their prey but rather ambush them as they go walking by. Many species of crab spiders will sit on flowers, hidden in the petals, waiting for victims to fly in.

Jumping spiders belong to the family *Salticidae*, which means "to leap." They may be found indoors as well as out. These nimble acrobats can jump more than 40 times their body length. Because of their highly mobile life style, jumping spiders have the best vision of all spiders. They are medium-sized and compact. They can be drab or brightly colored and are easily identified by their jerky movements.

The closely-related daddy long legs, harvestmen or harvest-spiders are *not* true spiders (arachnids of the order Opiliones, not Araneae) - they have no silk glands and therefore can't make webs. Most have legs that are really long relative to the size of the body. Unlike spiders, they are not exclusively predators but most are omnivorous or scavengers.

The next time you're in the garden, look around and see how many different kinds of spiders you can find. Also, keep in mind some of the gardening practices you can do to benefit spiders who in turn will repay you by helping keep some pest insects under control.

- <https://greennature.com/wisconsin-spiders/>
- <https://www.facebook.com/SpiderEducation>



25th Anniversary of the Northern Lights Master Gardeners' Conference a Success

<https://www.facebook.com/people/Northern-Lights-Master-Gardeners-Association-Volunteers-NLMGA/100064749904702/>



The Northern Lights Master Gardeners, Inc. (NLMGAI) held their 25th anniversary Spring Garden Conference on Saturday, March 18 at the UWGB-Marquette Campus. It was a smashing success! Around 200 participants, many NLMGA members and volunteers, and guest speakers made the event a memorable one.

The day included bucket and silent raffles, a garden art/craft sale, and books and other items for sale. Master Gardeners were on hand to answer general questions from participants at the "Ask a Master Gardener" table, below. There was even a celebratory 25th anniversary cake that everyone enjoyed after lunch.



Above: 'Fundamentals of Foraging'; below, 'Making a Peace Post' workshop



Learning how to start early seed in the 'Winter Seed Sowing' workshop

Members of NLMGAI offer research-based gardening advice to the general public. On average, members volunteered over 4,000 hours annually in the community answering questions and holding educational events. **Northern Lights is open to anyone with an interest in gardening or horticulture regardless of your skill level.** Whether you are a seasoned gardener or have never planted a seed you are welcome to join. *Being a certified master gardener is **not** a requirement.*

For more about the Master Gardener program visit

<https://mastergardener.extension.wisc.edu/bei-ng-a-master-gardener/>.

Celebrate Earth Day, April 22!

<https://www.earthday.org/> &
<https://www.epa.gov/earthday>

Earth Day is an annual celebration that honors the achievements of the environmental movement and raises awareness of the need to protect Earth's natural resources for future generations. The first Earth Day was held April 22, 1970. The April 22 date was selected in part to maximize the number of students that could be reached on university campuses as this date it fell between colleges' spring break and final exams.

As the countdown to Earth Day 2023 continues, it is important to remember regardless of where you are or what you do, you have the power to yield real change and be a champion for Earth. To protect our planet, we must invest in it. Here are some ways you can invest for Earth Day:

- Plant trees or a pollinator garden
- Reduce plastic use
- Make sustainable fashion choices
- Donate or volunteer
- Plan your own Earth Day event



Upcoming Northern Lights Master Gardener Events!



Friday, 4/21, 1pm at Athelstane Town Hall: Ask a Master Gardener – Three Sisters Gardening. This technique of companion gardening combines three popular food crops, thus making the best use of space.

Saturday, 5/6, 9:00-11:00a.m.: Spring Wildflower Walk at Harmony Arboretum (N3890 Cty. Rd. E, Peshtigo). Take a guided tour of the spring wildflowers in the Harmony hardwoods. Good walking shoes and insect repellent recommended. About 1 mile hike, will be cancelled if inclement weather.

Saturday, 5/20, 9:00am to noon: Spring Plant Sale at Harmony Arboretum. Select from a variety of plants grown by NLMGAI members and dug from the arboretum gardens. Bring your gardening questions too – Master Gardeners can help!



Universal Landscape Goals for Habitat

<https://homegrownnationalpark.org/doug-newsletter/4-universal-landscape-goals>



There are four ecological functions every landscape must perform if we are to achieve a sustainable relationship with the natural world that supports us (and continuing to insist on landscapes that do not sustain Mother Nature is not and has never been a realistic option). It's really very simple; our landscapes must do the things that enable ecosystems to produce the life support we and every other species requires.

Four Landscape Ecological Goals:

- 1) They must support a diverse community of pollinators throughout the growing season.
- 2) They must provide energy for the local food web.
- 3) They must manage the watershed in which they lie.
- 4) They must remove carbon from the atmosphere where it is wreaking havoc on the earth's climate.

How well a landscape accomplishes these goals depends on how well we, as landscape managers, choose and deploy the plants on our landscapes.



Here, neighbors are replacing turf grass with native plants, which are vital to supporting local insect and butterfly populations.

Lawns fail at these 4 goals:

If we plant most or all of our property in lawn, none of these goals will be met. More often than not, **lawn degrades the local watershed** by discouraging infiltration, facilitating stormwater runoff, and adding nitrogen, phosphorous, herbicides, and insecticides to the nearest stream or river. Today's cultural standard for lawn **supports no pollinators** and does not nourish the insects that enable birds, reptiles, amphibians and, many mammals to reproduce. And when it comes to carbon capture, **turf grass is our worst plant choice**.

Yes, lawn grasses do build their tissues out of carbon they have pulled from the atmosphere, but **every time we mow the lawn, we release that carbon back into the air**. Grass roots, like the roots of other plants, do leak some carbon into the soil, but grass roots are very short, and almost any other plant species deposits more carbon into surrounding soils than does grass. **Finally, every time we mow, we belch carbon from fossil fuels into the atmosphere.**

Native Plants succeed at these 4 goals:

We can help our yards meet their ecological responsibilities by using plants that support

1952: Keep your lawn mowed, fertilized & weed-free to show you're a responsible citizen.

2022: Shrink your lawn & plant native to show you're a responsible citizen.



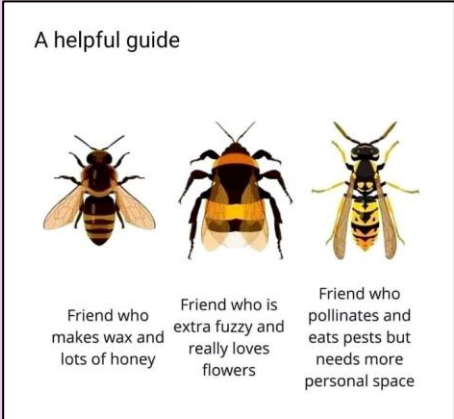
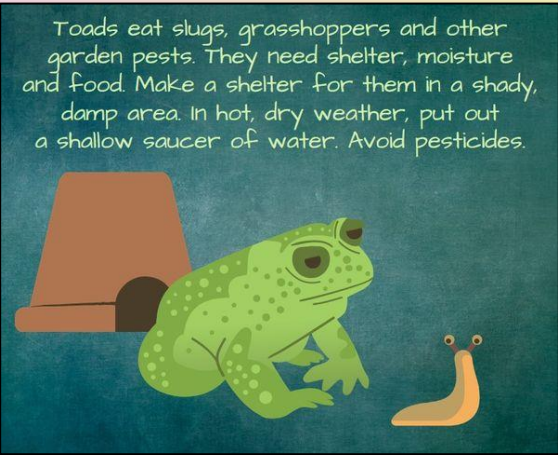
pollinators, good at sharing energy they have harnessed from the sun with the local animals that run our ecosystems, and good at building their tissues out of carbon and holding it within their structures. We can also choose plants with large canopies that soften the impact of pounding rain, and that support large root systems that encourage rainwater infiltration - and thus hold tons of water on site after a storm event.

Transforming our yards into these ecological gold mines is a process, one that can unfold over months, years, or even decades. Every time we plant a native perennial that nourishes specialist bees, we have helped all local pollinators, for generalist bees can use those plants as well. Every time we add a native tree species to our yard, we have reduced the ecological dead zone we call lawn and increased the ability of our yard to support breeding birds by supplying host plants for caterpillars on which those birds rely.



We don't need exact measures to know we are moving in the right direction. How much lawn have we eliminated? How many trees have we added? How many new flowerbeds or simply beds mulched with leaf litter have we built? How many invasive plants have we identified and targeted for removal? How many birds, butterflies, and bees have we seen taking up residence in our yards? These are all measures of success and noting any of them will motivate us to do more.

The path to sustainability lies along a continuum, with low (or no) ecological function at one end and a vibrant, ecological machine churning out ecosystem services every minute of every day at the other. *Every time you take action, your landscape moves closer to becoming a positive ecological force rather than a negative one.* Our current landscaping paradigm has been making withdrawals from the ecological bank account that supports us for far too long. By helping our properties reach the four ecological goals described above, we can finally start making life-saving deposits.



The Connections Between Water and Birds

Western Great Lakes Bird & Bat Observatory - <https://wglbbo.org/>
Excerpt from the March-April 2023 Newsletter
<https://us1.campaign-archive.com/?u=77bf270ce9f3dbbe587874a0c&id=18c5a89eb0>



With the **World Migratory Bird Day** (May 13) theme this year being water, it seems like the perfect time to share the logic of our being a part of water-related projects and of how the conservation of birds is often tied to the protection of water.

Water is essential for bird conservation. Beyond the basics that are true of all animals (i.e. birds need water for hydration, thermoregulation, etc.), many birds are linked to water through food and habitat.

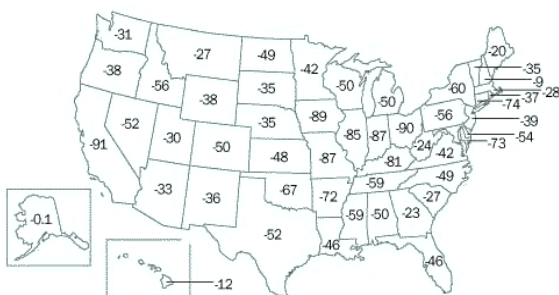
Wetlands and water bodies provide critical habitats for many bird species. While estimates of the number of bird species that depend on aquatic habitats for some part of their life range between 33% and 80%, a lot of birds depend on water-related habitats.



Wetlands are among the most productive ecosystems on earth, supporting a wide range of plants and animals, including birds. They provide breeding, nesting, and feeding locations for a myriad of species. Species as different as American Coots and Purple Martins depend on wetlands.

Human activities such as urbanization, agriculture, and development have led to the destruction and fragmentation of bird habitats. Wetlands, in particular, have been lost or degraded at an alarming rate. More than half of wetlands in the Great Lakes Region have disappeared, and more have been degraded.

Percentage of Wetlands Acreage Lost, 1780's-1980's



Twenty-two states have lost at least 50 percent of their original wetlands. Seven states—Indiana, Illinois, Missouri, Kentucky, Iowa, California, and Ohio—have lost over 80 percent of their original wetlands. Since the 1970's, the most extensive losses of wetlands have been in Louisiana, Mississippi, Arkansas, Florida, South Carolina, and North Carolina.
Source: Mitch and Gosselink. Wetlands, 2nd Edition, Van Nostrand Reinhold, 1993

Water pollution, including pesticide and nutrient runoff, poses a significant threat to water-dependent birds. Pollution can lead to the decline of fish and aquatic insect populations, which can have cascading effects on bird populations that rely on them for food.

Many insectivores depend on emergent insects, like mayflies, dragonflies, damselflies (below), and mosquitoes. Emergent insects are insects that spend their immature stages under water before maturing into the flying terrestrial forms we are more used to seeing. Some groups of emergent insects, like mayflies and stoneflies, are very sensitive to pollution. As waters become polluted, this important bird food source declines.



Additionally, nutrient pollution can cause **eutrophication**. Usually eutrophication happens when a water body receives too much nutrient fertilizer, which results in excessive algae and plant growth, premature aging, oxygen depletion, and degradation of habitats.

Algae blooms happen when too many nutrients enter a water body and algae grows excessively. You have probably seen this at lakes in the summer, when the water is green or there are green mats floating on top of the water. Sometimes these algae blooms are caused by algae that release toxic chemicals. These chemicals are very toxic to most animals, including birds, but also to people and dogs. Every year, dogs die from drinking water tainted by toxic algae blooms. In some cases, this has happened even when the water did not have visible signs of an algae bloom. Please keep your dog from drinking river and lake water, especially during the summer, and rinse dogs well if they've taken a swim.



Conservation efforts aimed at restoring and conserving wetlands and water bodies can help protect bird species that depend on these habitats. Restoration efforts can also improve water quality and quantity for both birds and other wildlife. In addition, some people care more about our waters than about birds – but by focusing on the benefits to water, we can expand the number of people who are willing to do good things for birds (even if they are only doing them for water quality benefits).

Taken together there are a lot of good reasons all of us to support water-related conservation. For that matter, there are a lot of good reasons for any bird-lover to get involved with protecting our waters.

- <https://www.wisconsinwetlands.org/update/s/our-legacy-of-wetland-loss-behind-our-water-problems/>
- <https://geochange.er.usgs.gov/sw/impacts/hydrology/wetlands/>

Brilliant Busy Bumblebees!

<https://mdc.mo.gov/magazines/xplor/2023-03/flower-farmers>



For a plant to make fruits and seeds, its pollen must move from one part of a flower to another. Some plants use wind to move pollen. But many plants rely on insects. And no insect is built better for pollen delivery than a fuzzy, buzzy bumblebee.

What's All the Buzz About?

With most plants, an insect only needs to touch a flower to get covered in pollen. But a few plants hide pollen deep inside their flowers. Luckily, bumblebees have a way to unlock this secret stash. When a bumblebee lands on a pollen-protective plant, it uses its jaws to clamp down on a flower. Then the bee flexes its flight muscles, causing a loud, whining buzz. The buzz travels through the bee's body and shakes loose the pollen (known as 'buzz pollination'). Potatoes and tomatoes are a few of the plants that require buzz pollination.



Turtlehead, a native plant, being buzz pollinated

Hardy and Hard-Working

Because they're so fuzzy, bumblebees can survive colder weather better than many other insects. They're often the first bees buzzing around in late winter — sometimes as early as February — and the last bees to disappear in the fall. Bumblebees aren't finicky when it comes to flowers. They visit many different kinds to gather the nectar and pollen they eat to survive. Unlike honeybees — which are native to Europe, not the U.S. — bumblebees don't make enough honey to last through the winter. So when flowers die back in the fall, most bumblebees do too. To collect enough food for themselves and their sisters, a bumblebee may visit nearly 500 flowers each day!

The Circle of Life

1. A bumblebee colony begins when a queen wakes in spring from a long winter slumber. She buzzes about feeding on nectar and

Continued next page



WI Land+Water Annual Youth Conservation Awareness Poster and Speaking Contests

<https://wisconsinlandwater.org/our-work/youth-education/poster-speaking-contest/2023-contest-results>

The Wisconsin Land and Water Conservation Association (WI Land+Water) hosted its 70th Annual Conservation Conference on March 1-3, 2023. As part of the conference, the WI Land+Water Youth Education Committee hosted the 66th Annual Conservation Awareness Poster and Speaking Contests. The speaking contest featured students from across Wisconsin delivering speeches on important conservation topics, while the poster contest showcased posters with a conservation theme of “One Water”.



Senior Division: (10-12th grade) First Place: Norah Johnstone, Washington County

At the conference’s opening luncheon, the first-place winners from the elementary, junior, and senior divisions of the speaking contest presented their speeches to a crowd of almost 500 conservation professionals and guests from across the state. The speeches had to address a relevant issue related to soil and water conservation, with an emphasis on its impact on their locality or Wisconsin.



Area speaking contest winners presented their speeches to a panel of judges during the Annual Conference in the Wisconsin Dells.

For the poster contest, the first-place winners in the primary, elementary, middle, junior and senior division will move on to represent Wisconsin at the National Association of Conservation Districts (NACD) Poster Contest held at the NACD annual meeting in 2024. The Poster and Speaking contests are two of the many programs that the WI Land+Water Youth Education Committee coordinates to educate and inspire Wisconsin’s youth about the importance of stewardship of natural resources.



Junior Division: (7-9) First Place: Mairead Kavanaugh, Green Lake County



Middle Division: (4-6th) First Place: Pearl Carriveau, Portage County

SPEAKING CONTEST:

Elementary Division: First place: Adisyn Schoeneck, Oneida County, “The Living Fossil”; **Second place:** Katie Butman, Trempealeau County, “Erosion Got Big”; **Third place:** Maeve Hasselquist, Pierce County, “Wild Parsnip.”

Junior Division: First place: Katelyn McNelly, Portage County, “Is Solar Power a Good Conservation Tool?”; **Second place:** Briella Brusveen, Columbia County, “Generational Conservation in Agriculture”; **Third Place:** Lucy Hoyt, Pepin County, “Use of Invasive Minnows’ Impact on Water Quality.”

Senior Division: First place: Amber Higley, Vilas County, “You Might Like These Fleas” (*below*); **Second place:** Charlie Thompson, Trempealeau County, “Runoff’s Impact on Soil Health and Agricultural Productivity”; **Third place:** Ava Wagner, Marquette County, “The Effect of Farm Runoff.”



POSTER CONTEST:

Primary Division: (K-1) First Place: Bonnie Strabel, Douglas County; **Second Place:** Ellie Tomaszewski, Vilas County; **Third Place:** Paxton Marth, Crawford County.

Elementary Division: (2-3) First Place: Tulip Ghorai, Washington County; **Second Place:** Madeline McNelly, Portage County; **Third Place:** Quinn Meverden, Shawano County.

Middle Division: (4-6) First Place: Pearl Carriveau, Portage County; **Second Place:** Pearl Hillary, Green County; **Third Place:** Addie Thonos, Fond du Lac County.

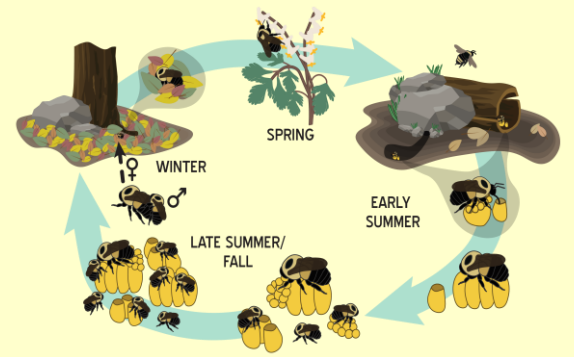
Junior Division: (7-9) First Place: Mairead Kavanaugh, Green Lake County; **Second Place:** Lily Berg, Monroe County; **Third Place:** Khole Kennedy, Ashland County.

Senior Division: (10-12) First Place: Norah Johnstone, Washington County; **Second Place:** Sophia Roth, Green County; **Third Place:** Brooke Froemel, Sawyer County.

To learn more about these programs, visit:
www.wisconsinlandwater.org/our-work/youth-education.

Bumblebees, continued

searching for a place to nest. Sometimes it’s a hole in a tree or a crack in a cliff. Usually it’s an abandoned rodent burrow.



- Once she finds a cozy nest, she makes little pots of wax, fills them with pollen and nectar, and lays an egg in each one.
- The eggs hatch into wiggly larvae. The queen gathers pollen and nectar to feed them. The larvae grow, spin cocoons, and emerge as worker bees. Once they start working, the queen stays inside the nest to focus on laying eggs, and the colony soon swells with 50 to 500 workers.
- By mid-summer, the queen lays eggs that turn into males as well as other queens. After leaving the nest, the males and queens mate with bumblebees from other colonies.
- When frosty weather arrives, the queen, workers, and males from the original colony die.
- Queens who left the colony find a cozy spot to spend winter and go dormant so they can continue the cycle the next spring.

Colony Careers

In a bumblebee colony, each bee has a job. The **queen** starts the colony and lays lots and lots of eggs. She is larger and lives longer than the other bumblebees. **Workers** are female bees that gather pollen and nectar, defend the nest, and care for the queen and babies. They have special structures on their hind legs, called *pollen baskets*, which they pack with pollen to carry back to the colony. **Drones** are male bees. They don’t do much except mate with queens from other colonies. If you find a bumblebee sleeping on a flower in late summer, it’s probably a drone.

Plan Bee

Bumblebees need our help! Many are disappearing in alarming numbers. That’s the bad news. The **good news** is you can do things in your own backyard to help them!

- Plant a variety of flowers so something is blooming from early spring through late fall. Native wildflowers are best.
- Avoid using pesticides. Not only do these chemicals kill pests, but they also kill bumblebees and other helpful insects.
- Mow your lawn less often. A few flowering weeds in a desert of grass offer an oasis for thirsty bees.

One out of every three bites of food you eat has help from pollinators like bumblebees.



WDNR Encourages Property Owners to Make Spongy Moth Treatment Plans Early
<https://dnr.wisconsin.gov/newsroom/release/68686>

The Wisconsin Department of Natural Resources (DNR) is encouraging property owners to examine their trees for egg masses of spongy moth (formerly known as gypsy moth) and plan ahead if control measures are needed. Spongy moth thrive in warm and dry weather, but even with “average” weather conditions this spring and summer, the outbreak is likely to continue and spread.



The pest is considered “generally established” across most of Wisconsin, except the western part of the state. High spongy moth populations are most likely to be seen within parts of the [quarantined area](#), but may be present in non-quarantined counties. Looking at [egg mass numbers](#) on a specific property is the best way to determine if there is a potential problem.

Property owners who have oak, birch, crabapple, aspen, willow and linden (basswood) trees should be particularly watchful as the caterpillars of this invasive insect prefer these species but they will also feed on many other kinds of trees and shrubs.

To know if spongy moth are on your property, look for egg masses which are tan-colored lumps about the size of a nickel or quarter. These masses are found on trees, buildings and other outdoor objects and may also be found inside protected places such as firewood piles and birdhouses. Egg masses produced in 2022 will feel firm and appear darker in color than older egg masses, which appear faded, feel spongy, and do not contain viable eggs.

Insecticide treatments, including foliage sprays and soil and trunk injections, may be a suitable option. An egg mass oil can also be applied to prevent the masses from hatching. A professional treatment is likely needed when there are high numbers of egg masses on large trees. When low or moderate numbers of egg masses are present, [physical controls](#) can often be used to reduce pest impacts and make insecticide unnecessary. Insecticide treatments are most effective when the caterpillars are small (mid-to-late May in southern counties and late May-early June in northern counties).

Host trees that are not treated and lost a lot of leaves and/or were drought-stressed in 2022 are at a higher risk of dying, especially if they lose a lot of leaves again in 2023. Low-vigor oak trees are likely infested by the native beetle, [two-lined chestnut borer](#), contributing to tree decline and death. Consult an [arborist](#) or [forester](#) for additional management recommendations.

Planning for insecticide treatments early can ensure trees will be able to receive treatment ahead of a last-minute rush when pesticide application businesses may already be very busy. Resources for finding a qualified pesticide applicator include the Wisconsin Arborist Association, the International Society of Arboriculture, and a local phone book.

Find [additional information on the spongy moth online](#), including egg mass oiling and removal, physical controls, and insecticide application.



DNR Seeks Volunteers for Frog & Toad Survey
<https://dnr.wisconsin.gov/newsroom/release/69041>



The Wisconsin Department of Natural Resources (DNR) asks the public to participate in the annual Wisconsin Frog and Toad Survey to help document frog and toad breeding calls throughout the state this spring and summer. The Wisconsin Frog and Toad Survey was formally launched in 1984 amid concerns about declining populations of several species of frogs. Since then, citizen scientists have helped DNR conservation biologists better define the distribution, status and population trends of all 12 frog and toad species in Wisconsin. *It’s the longest-running citizen science frog calling survey in North America.*

“The DNR is once again looking for night-loving volunteers, who we lovingly call ‘froggers,’ to lend their ears to monitor and help conserve frogs and toads in all corners of Wisconsin,” said Andrew Badje, the DNR conservation biologist who coordinates the survey.

Volunteers can participate in three ways:

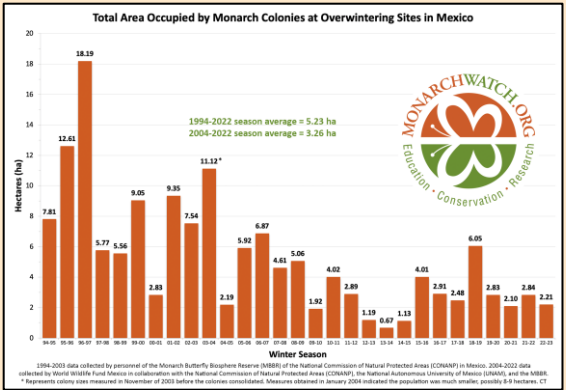
1. **Traditional Wisconsin Frog and Toad Survey** – This option requires volunteers to drive along a pre-set route for three nights of survey effort, once each in early spring, late spring and early summer. Volunteers make 10 stops per night, listening for five minutes at each site, documenting the species heard calling and the relative abundance of each species. [See available 2023 survey routes](#) and learn [how to volunteer for this survey](#).
2. **Mink Frog Survey** – Mink frogs are only found in northern Wisconsin and often call in the daytime. In June and July, volunteers are recruited to listen in the Northwoods, once during the day and once at night, along routes targeting ideal mink frog breeding habitat. Learn more about the survey and how to volunteer on [the Mink Frog Survey webpage](#).
3. **Phenology Survey** – Volunteers for this survey help monitor when frogs and toads first start calling each spring. Phenology volunteers choose one wetland to monitor throughout the frog calling season and record data as often as possible for five minutes per night. Learn more about the survey and how to volunteer on [the Phenology Survey webpage](#).

“Our volunteers are the beating heart of frog monitoring and conservation in Wisconsin,” said Badje. “They are why this survey is the longest-running citizen science frog calling survey in North America.” Volunteers are currently documenting the highest levels of American bullfrogs and Blanchard’s cricket frogs since the survey began, an encouraging sign that proactive conservation measures for these two species are likely paying off. Volunteers are also contributing substantial knowledge into the unique calling patterns and distribution of mink frogs throughout the Northwoods.

Visit the DNR’s [amphibians and reptiles webpage](#) for more opportunities to get involved.

Eastern Monarch Population Update
<https://monarchwatch.org/blog/2023/03/21/monarch-population-status-50/>

The WWF-Telmex Telcel Foundation Alliance, in collaboration with the National Commission of Natural Protected Areas (CONANP), the National Autonomous University of Mexico (UNAM), and the Monarch Butterfly Biosphere Reserve (MBBR), announced the total forest area occupied by overwintering monarch colonies today. Eleven (11) colonies were located this winter season with a total area of 2.21 hectares, a 22% decrease from the previous season (2.84 ha):



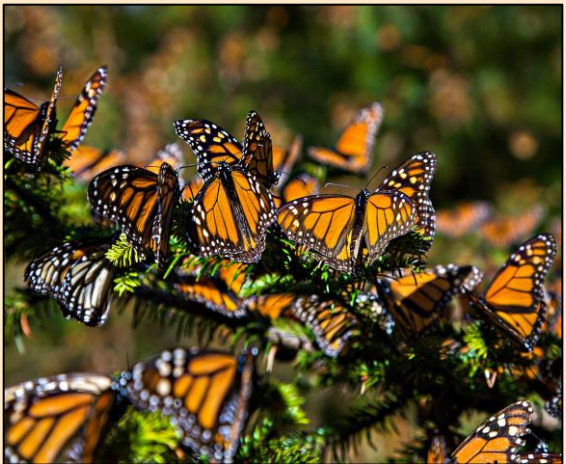
Monarch population growth is largely about timing, numbers and weather. Monarch Watch follows the population closely from month to month throughout the year looking for changes that will help us predict the relative size of the population from one interval or stage to the next.

This year, starting in May, the data indicated that the mid and late summer numbers would be low and that the migration itself would involve a smaller population than in recent years. This expectation was realized. The number of butterflies tagged during the migration was the lowest in 9 years. This was another sign that the overwintering numbers would be low since the number tagged is correlated with the size of the overwintering population. Two other factors, droughts in Texas and late arrival at the overwintering sites, are associated with low numbers and both occurred last fall.

All in all, monarchs had a bad year due to a sequence of unfavorable weather events. While low numbers are something of a concern, in recent years monarchs recovered from low numbers in 2012 (1.19 ha), 2013 (0.67 ha) and 2014 (1.13 ha) and they will do so again – weather permitting. For more information on the status of the population through the last season see monarchwatch.org/blog/2023/01/04/monarch-population-status-49.

For more information:

- <https://journeynorth.org/monarchs/resource/article/03212023-monarch-winter-2022-2023-population-numbers-released>
- https://journeynorth.org/sites/default/files/2023-03/WWF%20Monarch%20Butterfly%20Report%202022-2023_1.pdf



APRIL | 2023

OUTDOOR ALMANAC

1

Downy and Hairy woodpeckers are excavating trees to nest. These woodpeckers look alike, but Hairy Woodpeckers are larger with a bill about as long as their heads while Downy bills are much shorter.



4

Great Blue Herons, Great Egrets, and Snowy Egrets return to marshes, joining the small population of overwintering Great Blue Herons.

6

Full moon



7

Listen for Spring Peepers in wetlands; the persistent high-pitched whistles of large congregations fill the air after dusk.

10

Mourning Cloak butterflies overwinter as adults, sheltered under loose bark or in holes in trees. They emerge in spring before most flowers are open, so they feed on sap from deciduous trees and can also be found sipping on puddles in dirt paths and roads.



14

Eastern shadbush, also called serviceberry, blooms in wetlands and moist woodlands, creating clouds of white blossoms along riverbanks.

17

Great Horned Owls are not cavity nesters but use old Red-tailed Hawk or Great Blue Heron nests. Look for the still-downy heads of Great Horned Owl fledglings sticking up over the edges of these large nests.

19

Red Squirrels have shed their warm, deep-red winter fur. They are more olive green-to-brown during the warmer seasons.

22

Earth Day. The Lyrid meteor shower is expected to peak tonight.



25

Watch for Ruby-throated Hummingbirds. Early returning hummingbirds often feed from sap wells made by Yellow-bellied Sapsuckers. If you plan to put out a hummingbird feeder, now is the time.



28

National Arbor Day. Visit your local wildlife sanctuary and see how many trees you can identify.

30

Search in woodlands for early wildflowers, such as trout lily, trillium, bloodroot, trailing arbutus, and hepatica.



Mass Audubon

massaudubon.org



Soil Health & You!

<https://www.farmers.gov/conservation/soil-health>

Healthy soil is the foundation of productive, sustainable agriculture. Managing for soil health allows producers to work with the land – not against – to reduce erosion, maximize water infiltration, improve nutrient cycling, save money on inputs, and ultimately improve the resiliency of their working land.



Minimize Disturbance

From hooves to plows, soil is disturbed in many ways. While some disturbance is unavoidable, minimizing disturbance events across your operation builds healthier soils. To minimize disturbance of your soil, you can:

- Limit tillage
- Optimize chemical input
- Rotate livestock

Maximize Soil Cover

As a general rule, soil should be covered whenever possible. You can plant cover crops as part of both grazing and cropland operations. To maximize soil cover year round, you can:

- Plant cover crops
- Use organic mulch
- Leave plant residue

Maximize Biodiversity

Increasing diversity across your operation can break disease cycles, stimulate plant growth, and provide habitat for pollinators and organisms living in your soil.

- Plant diverse cover crops
- Use diverse crop rotations
- Integrate livestock

Maximize Presence of Living Roots

Living roots reduce soil erosion and provide food for organisms like earthworms and microbes that cycle the nutrients you plants need.

- Reduce fallow
- Plant cover crops
- Use diverse crop rotations

For more about conserving soil, visit the website at left.



